

CLAIM AMENDMENTS

1. (Currently Amended) A microwave antenna for medical ablation, comprising:
a transmission line having an inner conductor, an outer conductor and a dielectric insulator to provide insulation between the inner and outer ~~conductor~~ conductors of the transmission line, and
an energy-emitting antenna element positioned at the distal end of the transmission line to transmit a microwave near-field;

~~wherein~~ the antenna element ~~has~~ having an inner conductor electrically coupled to the inner conductor of the transmission line, and a sheath of dielectric insulator around the inner conductor of the antenna element; and

~~wherein~~ the antenna element comprising a conducting metallic cap that is electrically connected to the distal end of the inner conductor of the antenna element, and the cap surrounds surrounding a length of the sheath of insulator, and the dimensions of the cap are being determined to provide impedance matching between the antenna element and the transmission line, the antenna element being configured with conducting rings spaced apart from each other along the length of the antenna element by slots and being configured by being bent to form an open loop oriented such that the antenna element extends transverse to the longitudinal axis of the transmission line.

2. (Currently Amended) An antenna according to claim 1, wherein the ~~particular~~ dimensions, of the metallic cap that are determined include one or more of:

~~the~~ a length of the cap;

the length of the sheath of insulator that is surrounded by the cap; and

~~the~~ a radius of the cap.

3. (Currently Amended) An antenna according to claim 1, wherein the antenna element is ~~built into~~ coupled to the end of the transmission line, and the cap is ~~fixed~~ coupled to the inner conductor of the transmission line.

4. (Currently Amended) An antenna according to claim 3, wherein a first length of the outer conductor of the transmission line is removed from the distal end of the transmission line to create the antenna element.

5. (Currently Amended) An antenna according to claim 4, wherein a shorter length of the dielectric insulator is removed from the distal end to expose a length of the inner conductor of the transmission line for fixing of the cap.

6. (Currently Amended) An antenna according to claim 5, wherein the dimensions to be determined ~~further~~ include:

the length of exposed inner conductor of the transmission line between the distal end of the sheath of insulator and the cap.

7. (Cancelled)

8. (Currently Amended) An antenna according to claim ~~7~~ 1, wherein the antenna element comprises insulating rings in the slots and the conducting rings placed alternately along the length of insulating sheath.

9. (Cancelled)

10. (Currently Amended) An antenna according to claim ~~7~~ 1, wherein the conducting rings comprise rings of the outer conductor.

11. (Currently Amended) An antenna according to claim ~~7~~ 1, wherein the cap is made using a conducting ring.

12. (Currently Amended) An antenna according to claim 1, wherein the sizes of the conducting rings and the slots between ~~them~~ the conducting rings are selected to determine the shape of the near-field distribution.

13. (Currently Amended) An antenna according to claim 12, wherein all the conducting rings are the same size, and all the slots between ~~them~~ the conducting rings are the same size.

14. (Currently Amended) An antenna according to claim 13, wherein the conductive rings are twice as wide as the slots between ~~them~~ the conducting rings.

15. (Currently Amended) An antenna according to claim 12, wherein the slot and ring sizes gradually increase towards the tip of the antenna, thereby making ~~makes~~ a forward firing antenna.

16. (Currently Amended) An antenna according to claim 12, wherein the slot and ring sizes gradually decrease towards the tip of the antenna, thereby making ~~makes~~ a reverse firing antenna.

17. (Currently Amended) An antenna according to claim 1, wherein the dielectric loading produced by the ~~size~~ length of the sheath of the insulator surrounded by the cap is determined to ensure the near field flow terminates at the tip of the antenna rather than at the transmission line/antenna element junction.

18. (Currently Cancelled)

19. (Currently Cancelled)

20. (Currently Amended) An antenna according to claim 1, wherein the antenna comprises a ~~Teflon~~ TEFLON® sheath surrounding at least the antenna element.

21. (Original) An antenna according to claim 1, wherein the antenna element is delivered to an ablation site by feeding the transmission line through a catheter.

22. (Currently Amended) An antenna according to claim 1, ~~wherein the antenna further comprises~~ comprising a temperature sensor to sense the temperature of the tissue being ablated by the antenna.

23. (Currently Amended) An antenna according to claim 22, ~~wherein the~~ comprising a microwave generator delivers energy at 2.45 GHz.

24. (Original) An antenna according to claim 1, further comprising a computer control system to monitor or the ablation process and control the microwave generator.

25. – 45. (Cancelled)